CEAC and ASA(ALT)
A Partnership for Our Soldier

CAIV Analysis Tool

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Agenda

- The Army CAIV Vision, *Mr. Mort Anvari*
- Sample CAIV Graphs
- CAT System Concept
- CAT User Menu
  - Enter Schedule
  - Enter Component Cost Information
  - Enter Component Performance Information
- Select the Best Value Components
- Other Graphs provided by CAT
- Conclusion – The Army CAIV Vision

The Army CAIV Vision

U.S. Army

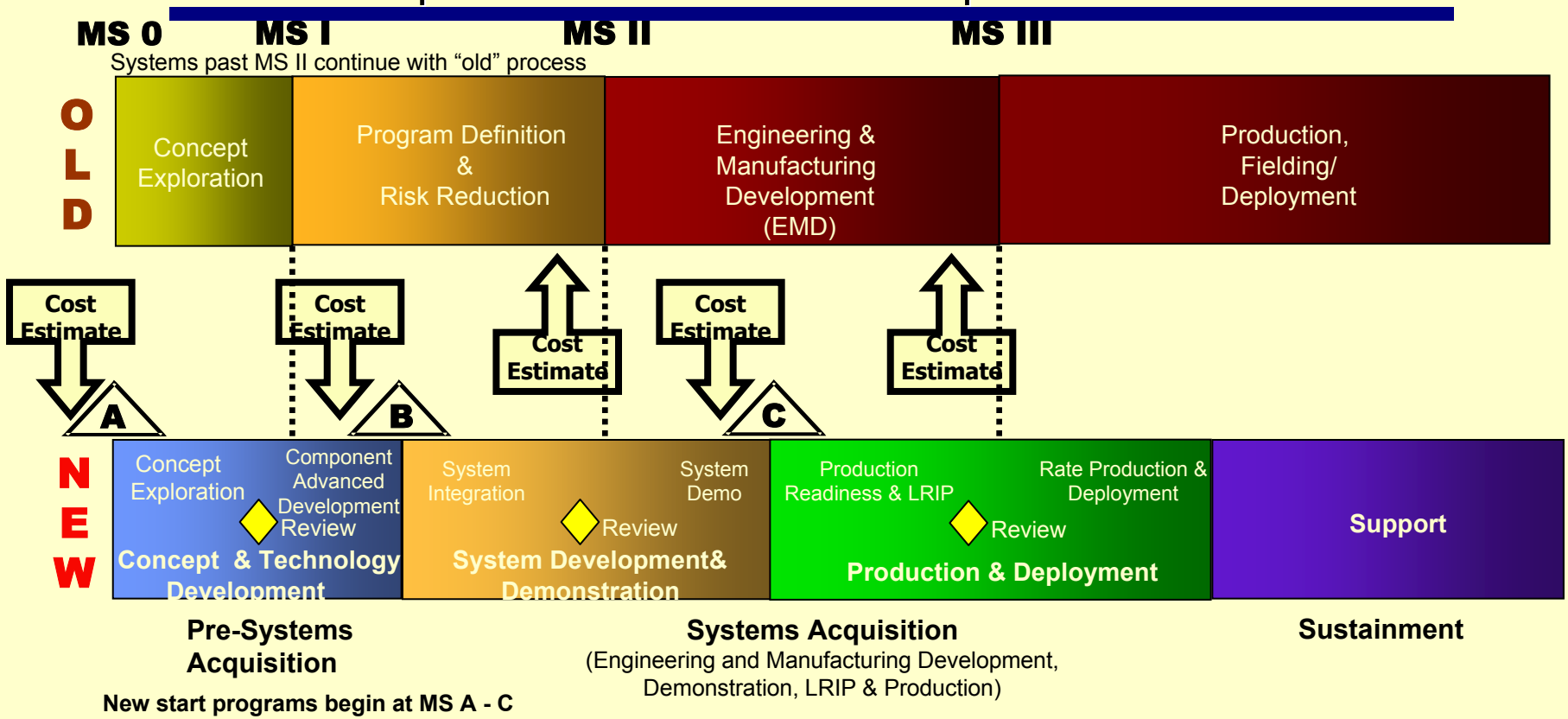
Cost and Economic Analysis Center

Mr. Mort Anvari

When Cost Estimates are Prepared

Weapons/Information Systems

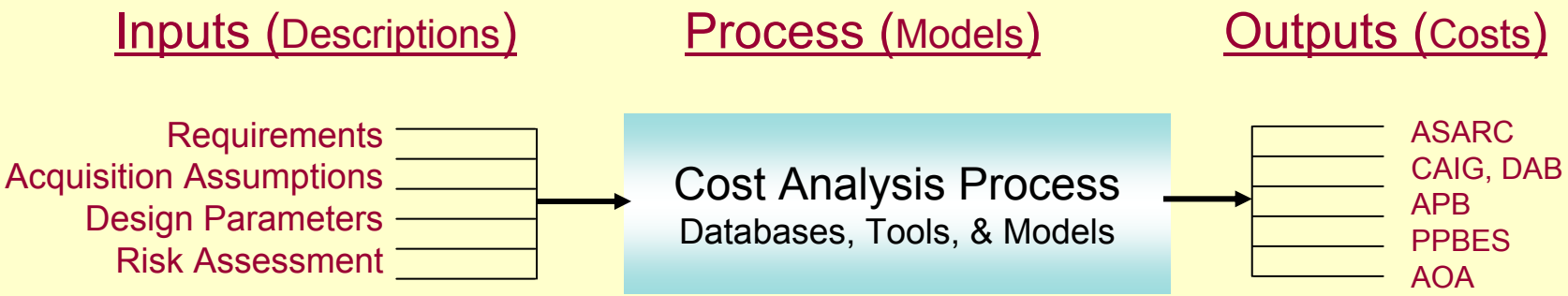
Comparison of Old vs. New Acquisition Process



NEW Cost Analysis

- **Influences Design**
- **Implements CAIV**
- **Demands Design-Based and Performance-Based CERs**
- **Demands Component-Level Cost Models**
- **Supports SMART Initiatives**

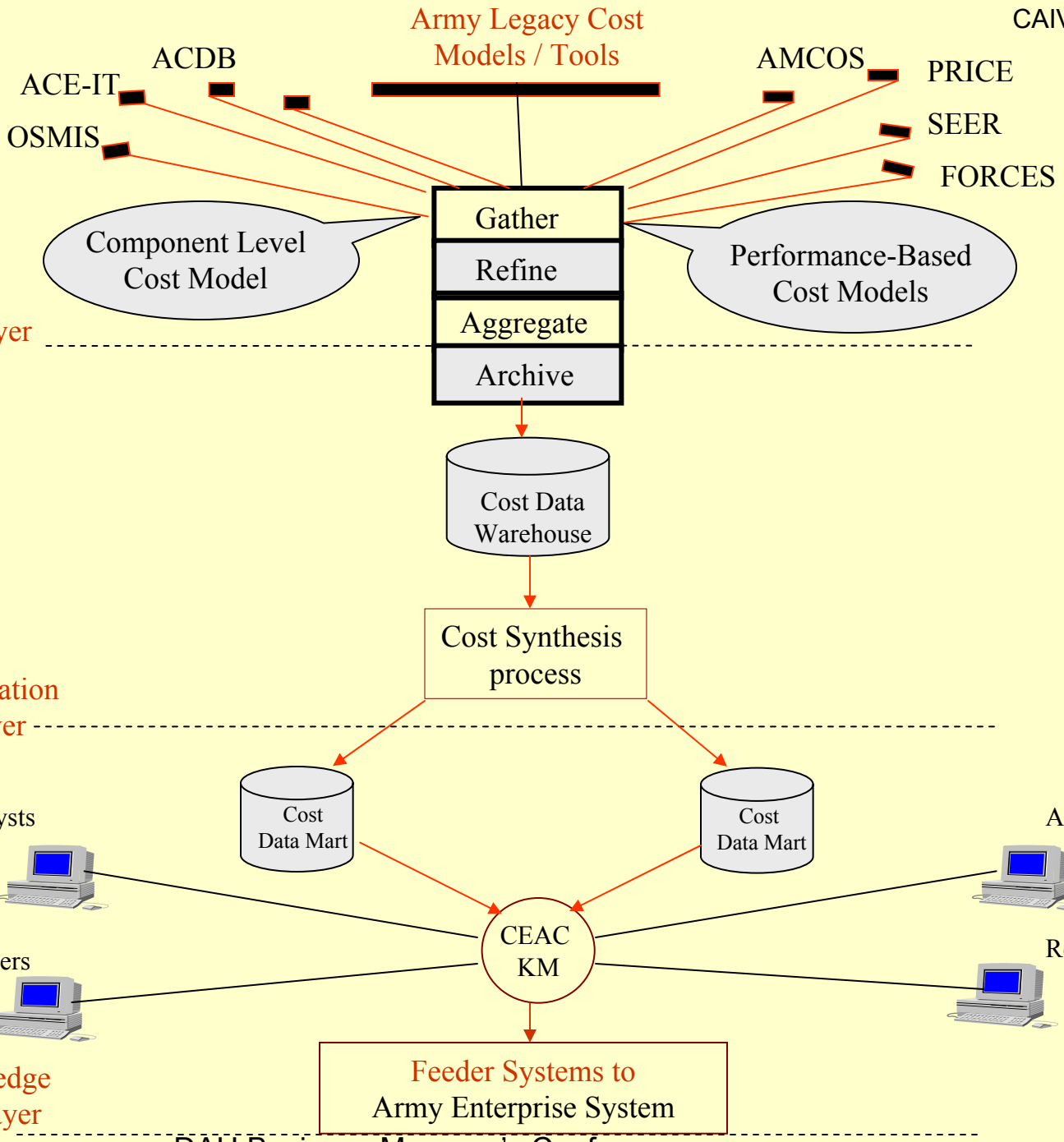
Cost Analysis Domain



Types of Cost Studies

	Studies	Should be Known	Unknown	Class
Current Capability	Cost Estimating	Descriptions, Models	Costs	Analysis
	CER Development	Description, Historical Costs	Models	Synthesis
Needed Capability	CAIV	Cost Goals, **Models**	Descriptions (Design and Performance Parameters)	Control

Performance Based and Design Based Cost Models Currently do not Exist


Army Legacy Cost Models / Tools
ACDB
ACE-IT
OSMIS
AMCOS
PRICE
SEER
FORCES
Component Level Cost Model
Gather
Refine
Aggregate
Archive
Performance-Based Cost Models
Cost Data Acquisition Layer
Cost Data Warehouse
Cost Synthesis process
Cost Information Store Layer
Cost Data Mart
Cost Data Mart
Cost Analysts
Acquisition
CEAC KM
Engineers
Requirements
Cost Knowledge Delivery Layer
Feeder Systems to Army Enterprise System

Cost As An Independent Variable (CAIV)

PARADIGM	FIXED Independent Variable	VARIABLE Dependent Variable
Old-"Business as usual"	Performance	Tech Design, Schedule,& Cost
Design to Cost	Performance & Cost	Tech Design & Schedule
New CAIV	Life Cycle Cost	Performance, Tech Design,& Schedule

Cost As An Independent Variable (CAIV)

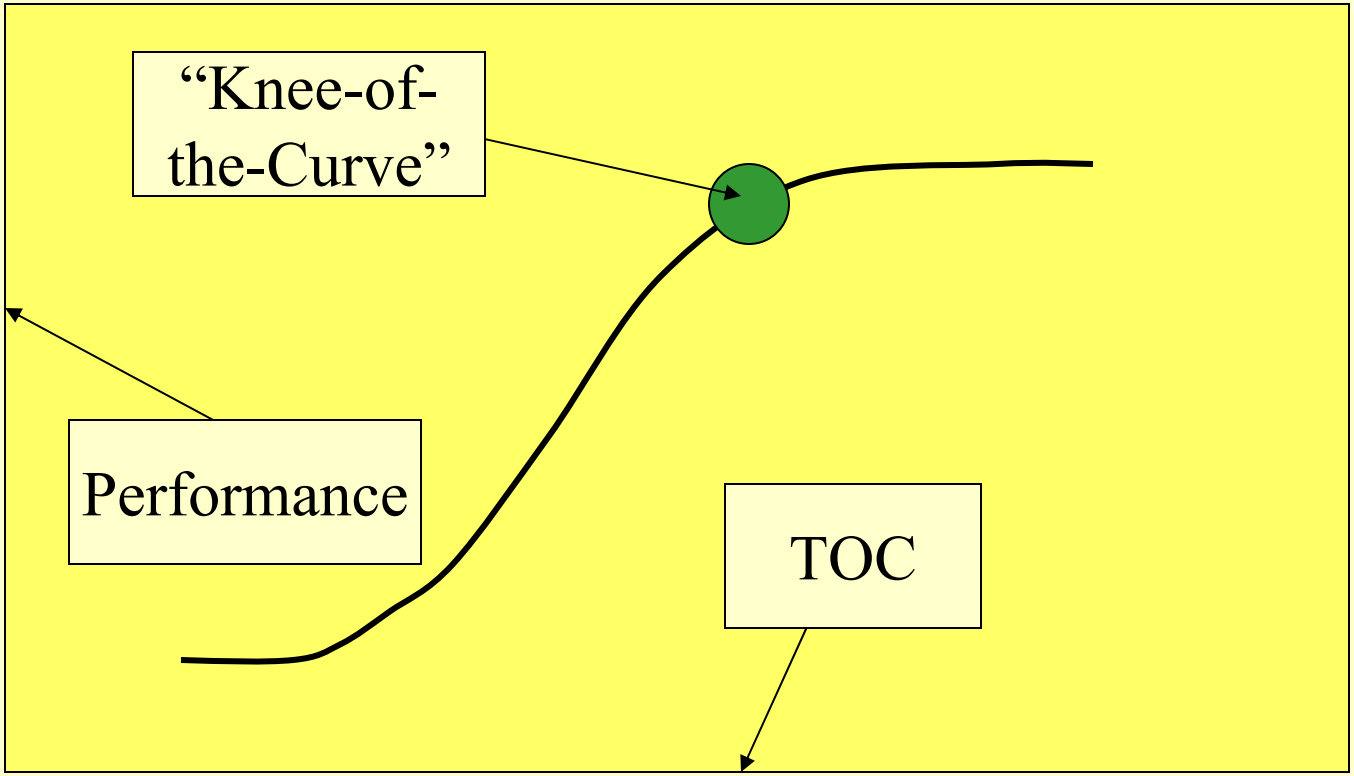
What is the Cost Analyst's role?

- Cost Analyst plays active role in CAIV implementation.
- Cost Analyst provides "order-of-magnitude"estimate at pre-milestone 0 concept stage…cost to bring emerging technologies from the technology base to full scale development.
- Cost Analyst estimates the cost of new technologies in production and operation. These early estimates play critical role in rankings of the Analysis of Alternatives (AoAs).

Sample CAIV Graphs

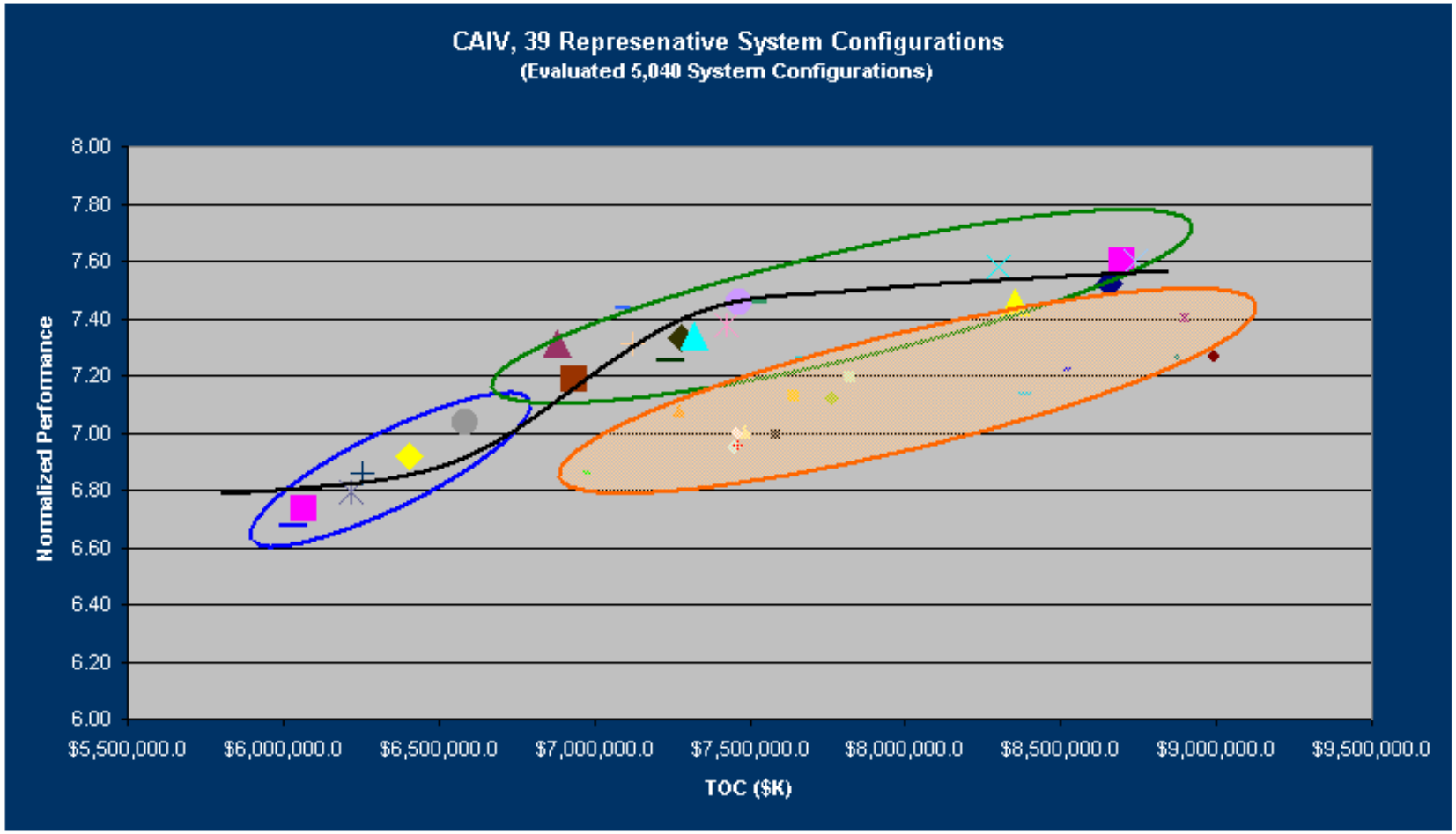
Colonel Terrell W. Mathews, Ph.D.
Assistant Secretary of the Army
(Acquisition, Logistics, Technology)

Typical CAIV Curve



CAT plots Performance as a function of Total-Ownership-Cost (TOC).

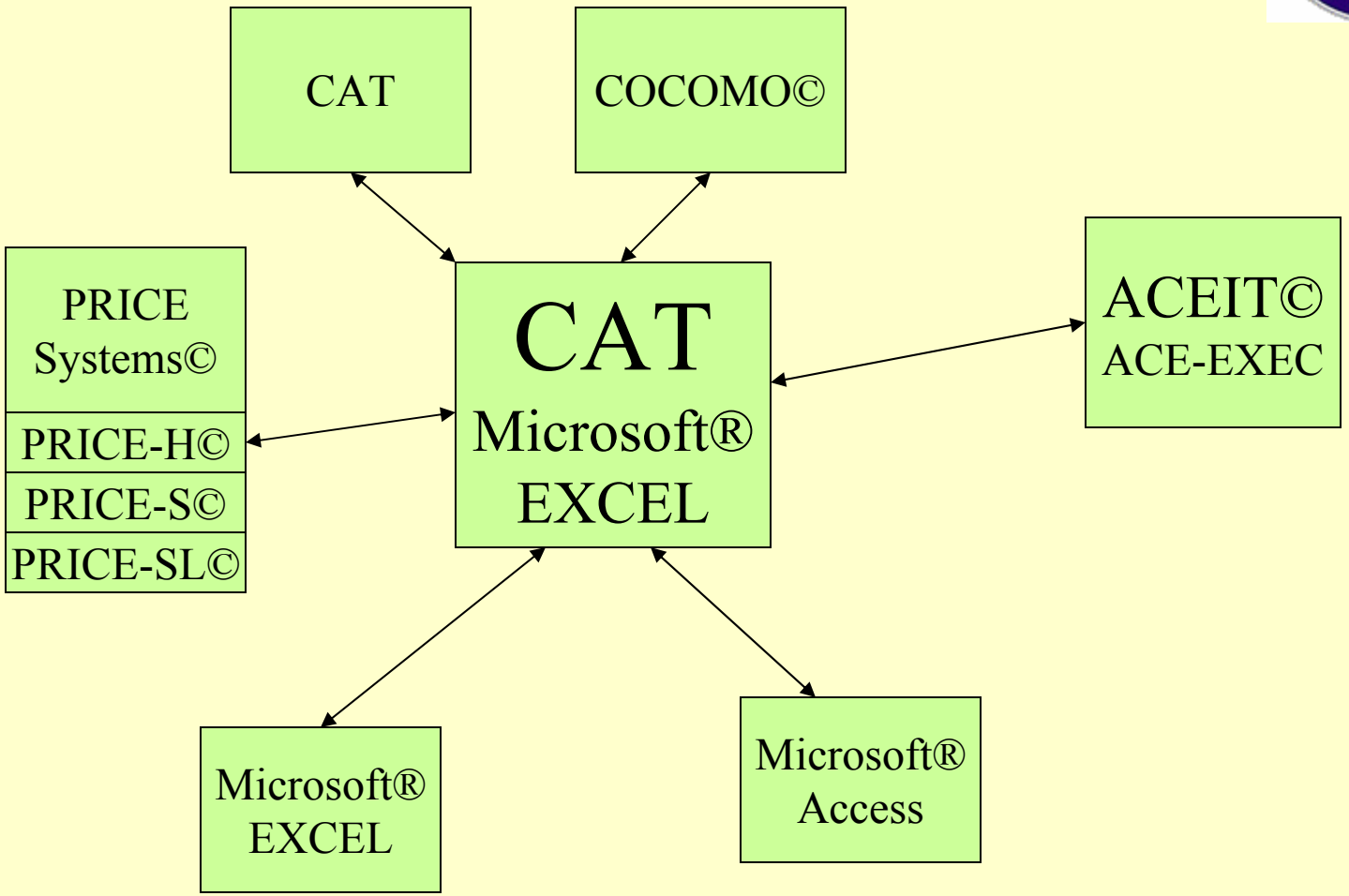
Sample System Analysis



One may access CAT data to compare various system configurations.

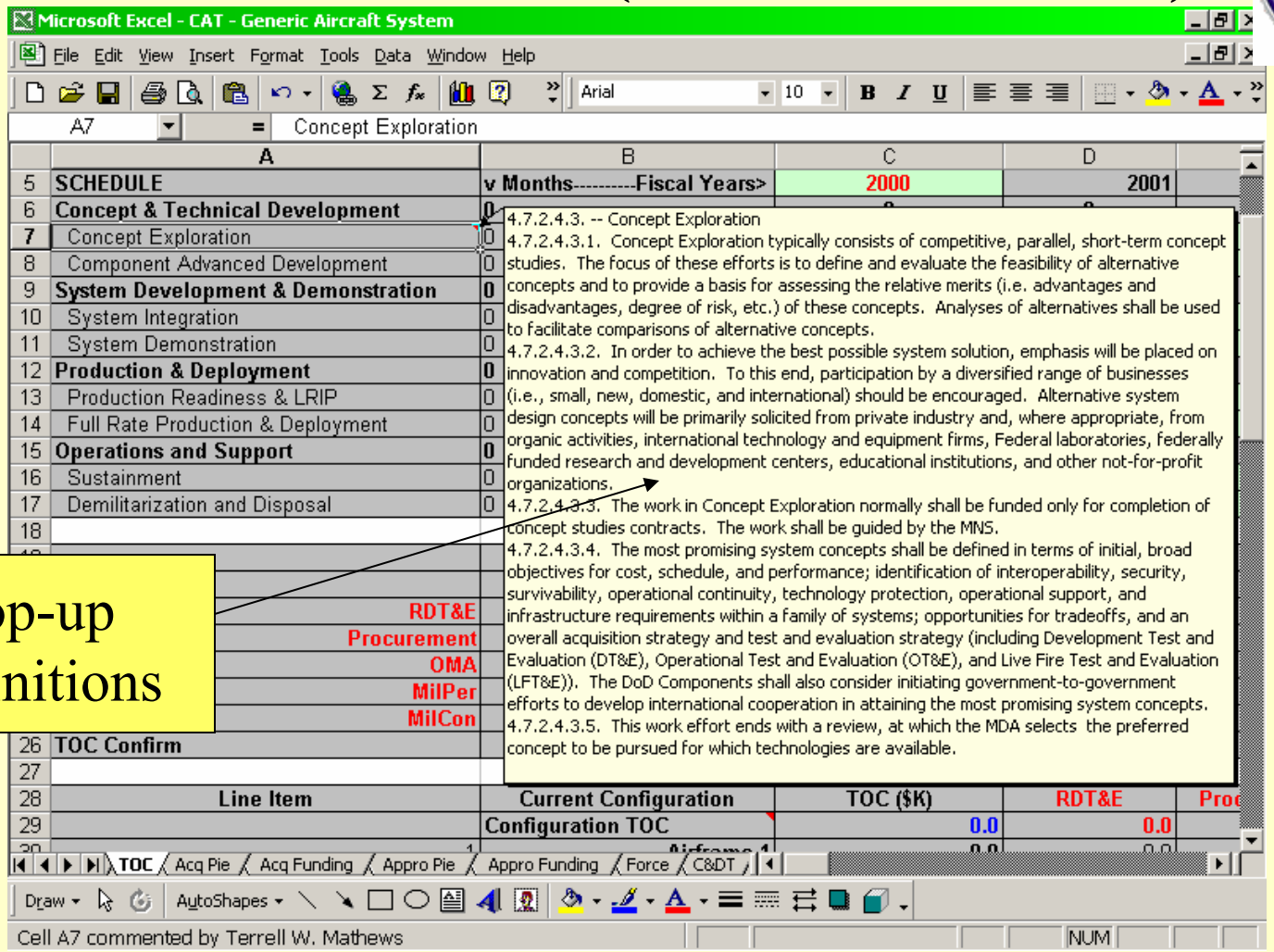
CAT System Concept

CAT Conceptual Environment



CAT shares information with numerous other Microsoft® based tools.

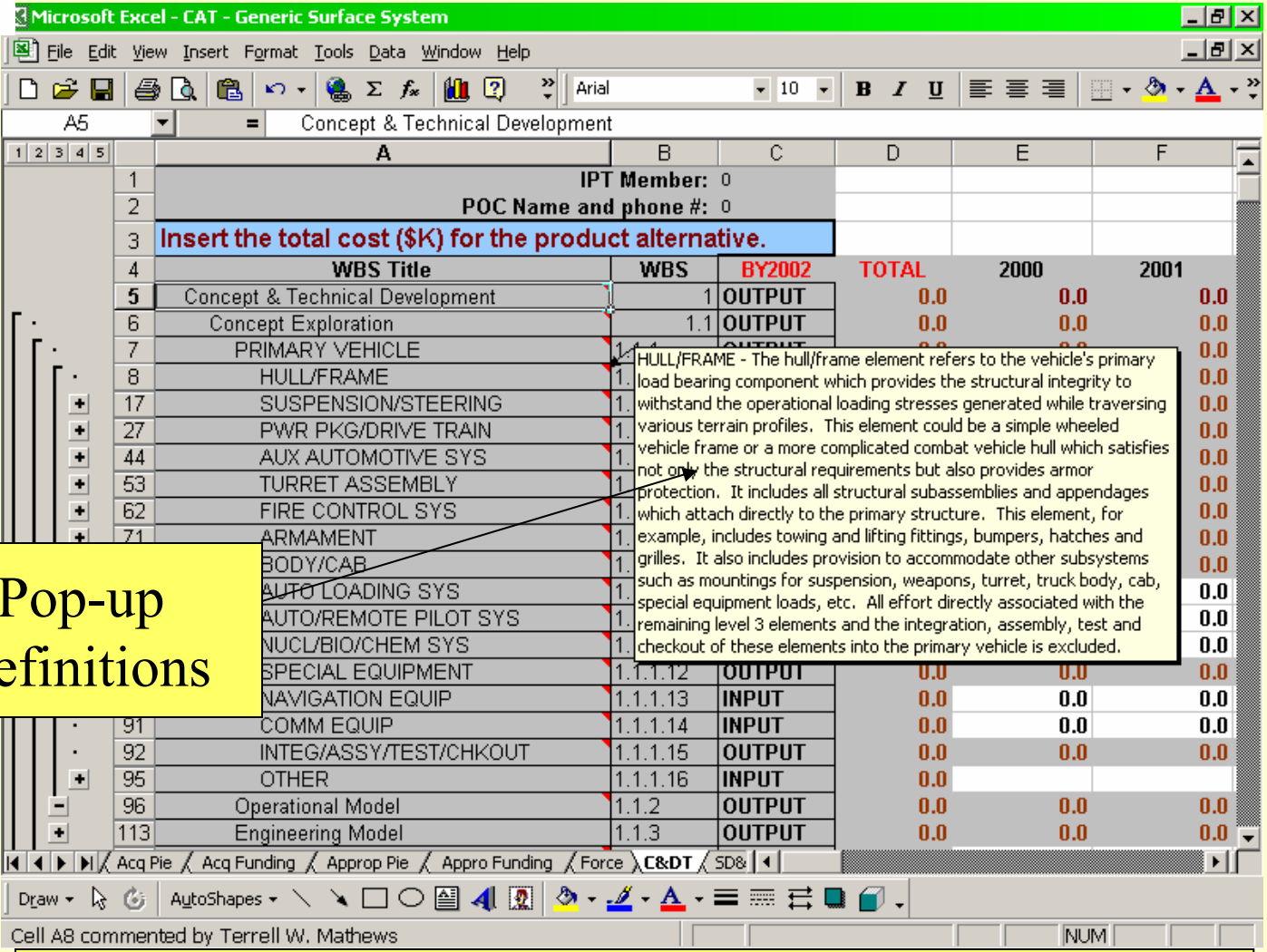
DoDI 5000.2 (23 Oct 2000)



Pop-up Definitions

CAT complies with the latest version of DOD 5000.1.

Mil-HNBK-881B WBS

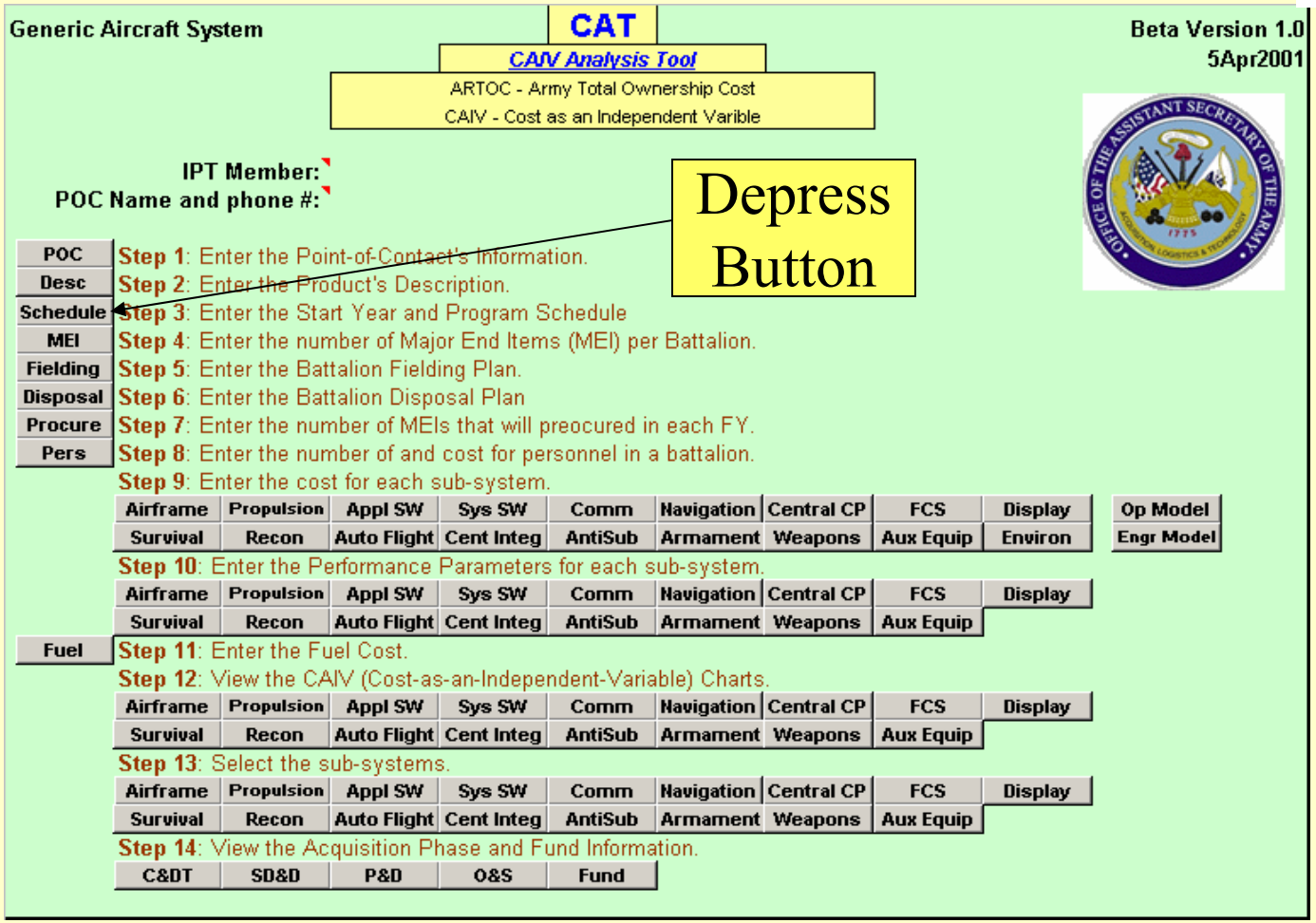


Pop-up Definitions

CAT complies with the latest version of Mil-HNBK-881B.

CAT User Menu

CAT Start Menu



One points and clicks through the Data-Entry-Menus.

Schedule Information

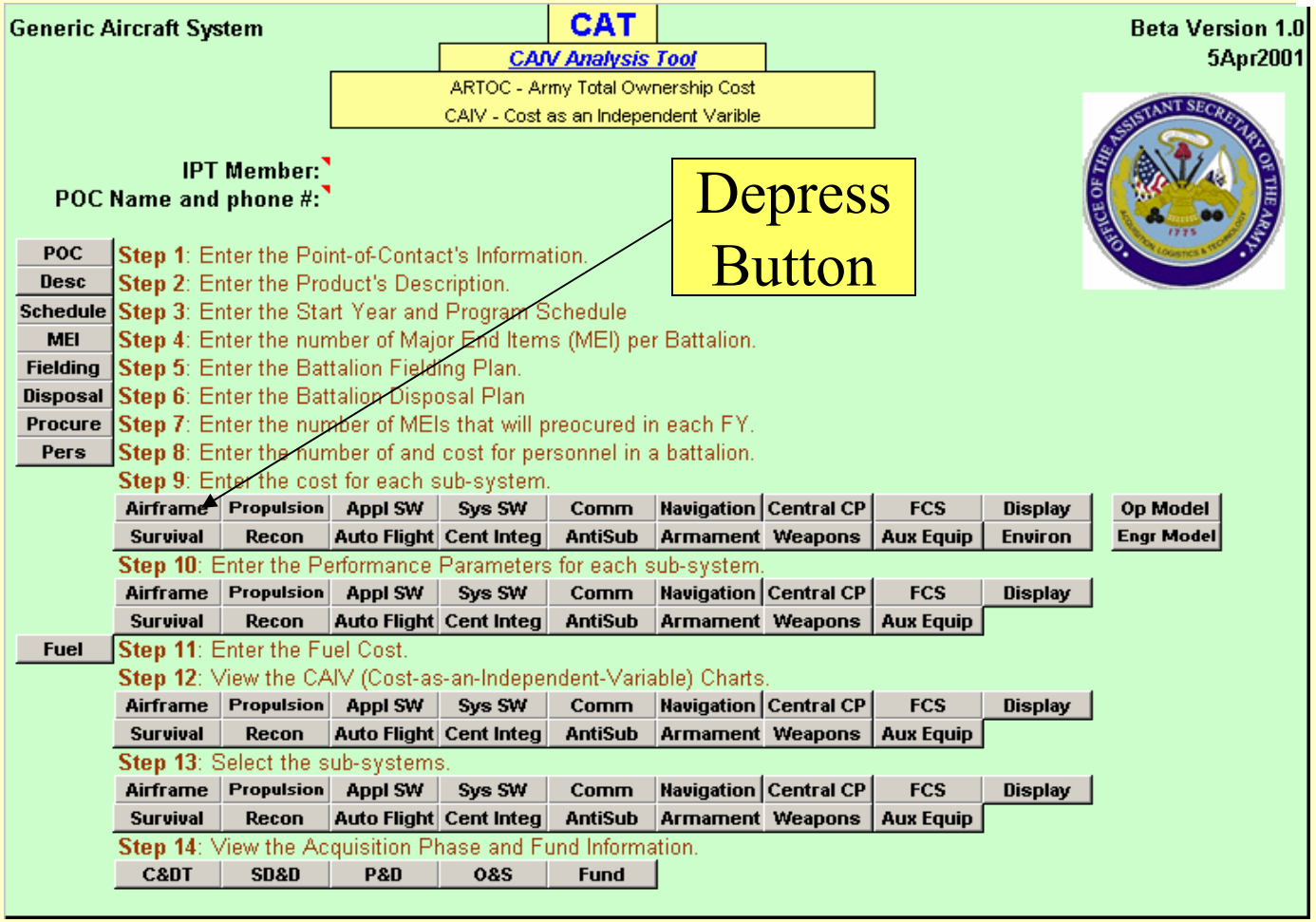
Start FY

IPT Member:	0				
POC Name and phone #:	0	MODIFY only GREEN cells.			
SCHEDULE	v Months----------Fiscal Years>	2000	2001	2002	2003
Concept & Technical Development	0	0	0	0	0
Concept Exploration	0				
Component Advanced Development	0				
System Development & Demonstration		0	0	0	0
System Integration					
System Demonstration					
Production & Deployment		0	0	0	0
Production Readiness & LRIP					
Full Rate Production & Deployment					
Operations and Support		0	0	0	0
Sustainment					
Demilitarization and Disposal					

Number of Months for each Sub-phase

CAT vectors the user to the "Schedule" Menu.

CAT Cost Menu



One points and clicks to get to the Cost entry Menu.

Component Cost

Link to/from another Tool, e.g. PRICE-S©

Airframe

Column Ref.

1	2	3	4	5	6	7	8	9

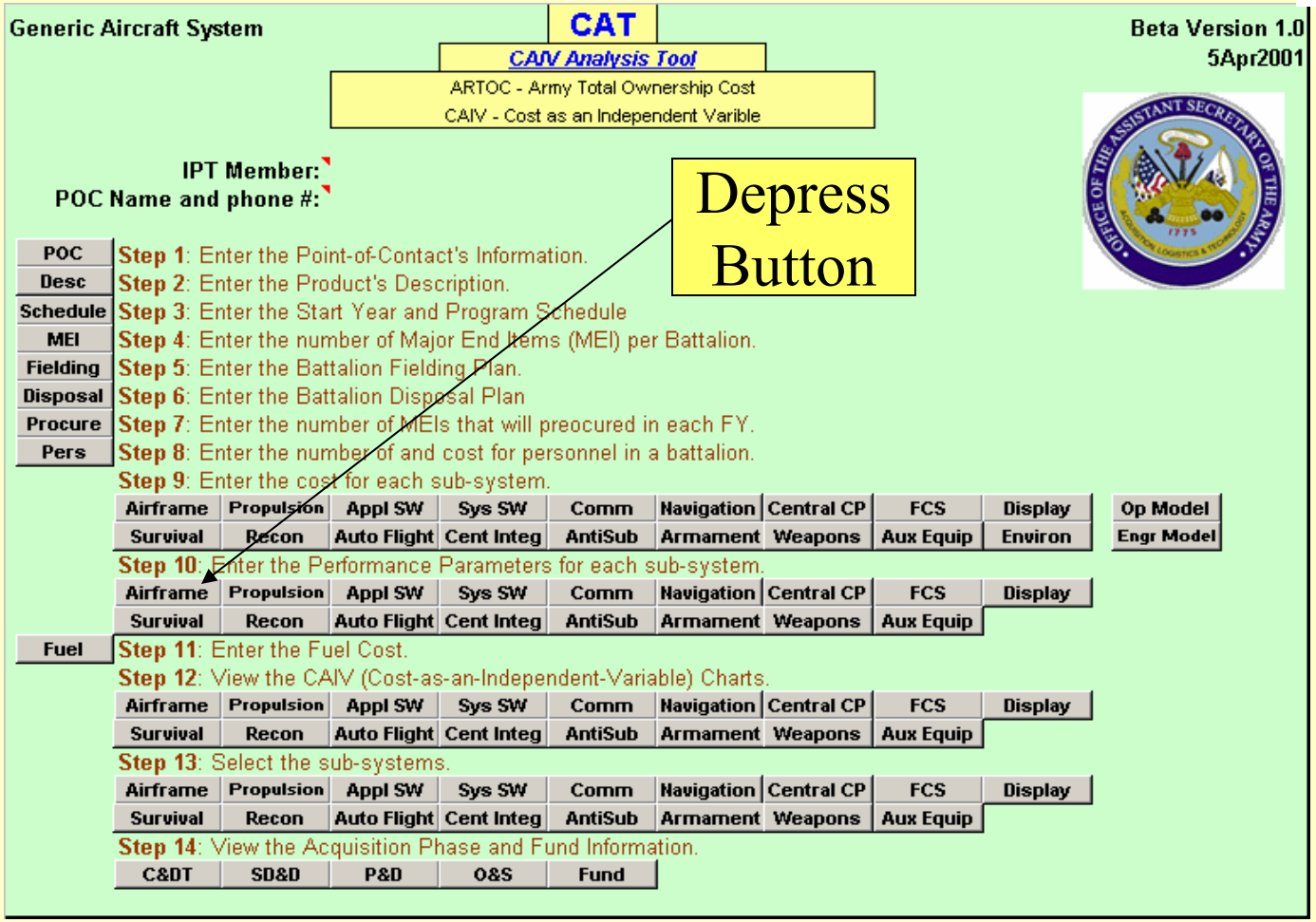
The following table defines the alternative products.

USE	Product #	Manufacturer	Type	RDT&E Cost ($K) per product	Procurement Cost ($K) per product	Annual ILS Cost ($K) per Product	Annual Training Cost ($K) per Product
use	1	Acme	Airframe 1				
	2						
	3						
	4						

Enter the Component Information

CAT vectors the user to the Component Cost Menu .

CAT Performance Menu



One points and clicks to get to the Performance entry Menu.

Component Performance

Link to/from Another Tool

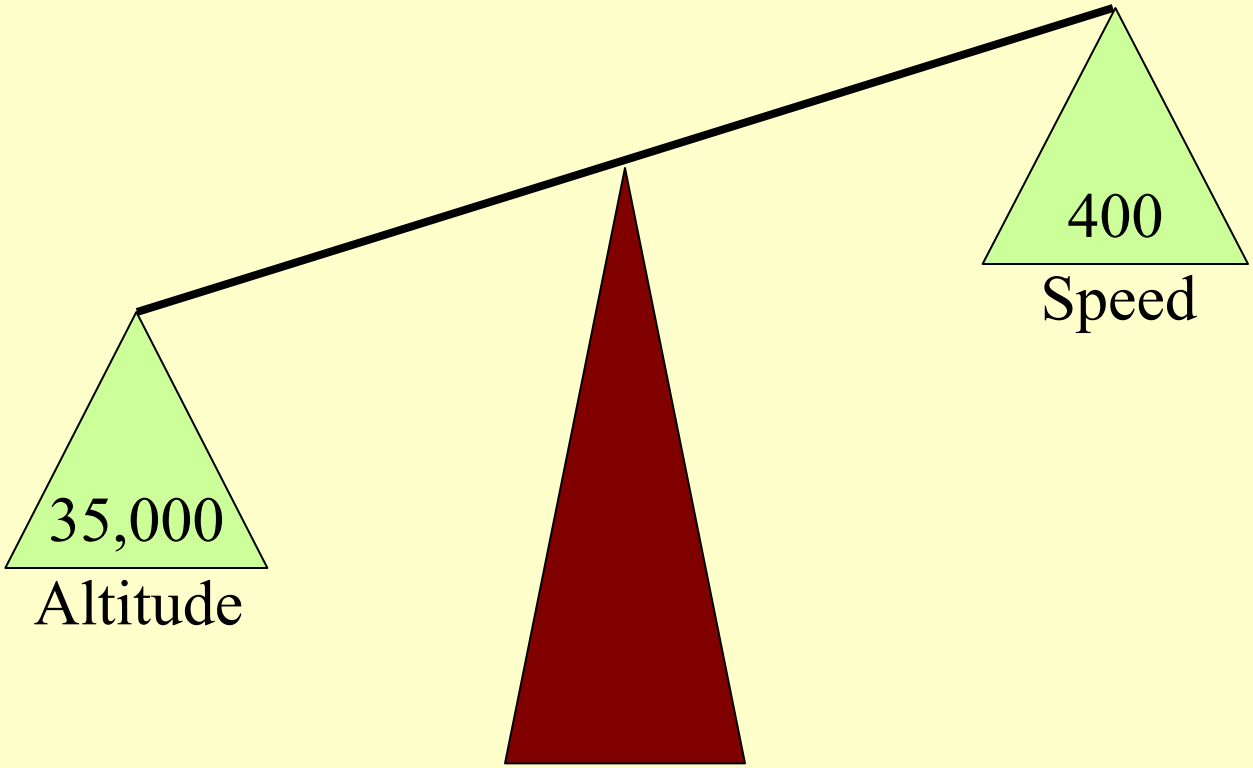
	KPP #1 Interoperability					
Parameter	Parm #1	Parm #2	Parm #3	Parm #4	Parm #5	Raw Score
Weighting	100	0	0	0	0	100
Actual Value >	10.0	10.0	10.0	10.0	10.0	
	10.0	10.0	10.0	10.0	10.0	10.0
	20.0	20.0	20.0	20.0	20.0	9.0
	30.0	30.0	30.0	30.0	30.0	8.0
	40.0	40.0	40.0	40.0	40.0	7.0
	50.0	50.0	50.0	50.0	50.0	6.0
	60.0	60.0	60.0	60.0	60.0	5.0
	70.0	70.0	70.0	70.0	70.0	4.0
	80.0	80.0	80.0	80.0	80.0	3.0
	90.0	90.0	90.0	90.0	90.0	2.0
	100.0	100.0	100.0	100.0	100.0	1.0
Param Scores	10.00	10.00	10.00	10.00	10.00	MOE Score
Wt'd Scores	1000.0	0.0	0.0	0.0	0.0	**10.0**
Wt'd Scores	1000.0	0.0	0.0	0.0	0.0	**10.0**
Wt'd Scores	1000.0	0.0	0.0	0.0	0.0	**10.0**

Enter the Component Information

CAT vectors the user to the Component Performance Menu .

Inherent Weighting

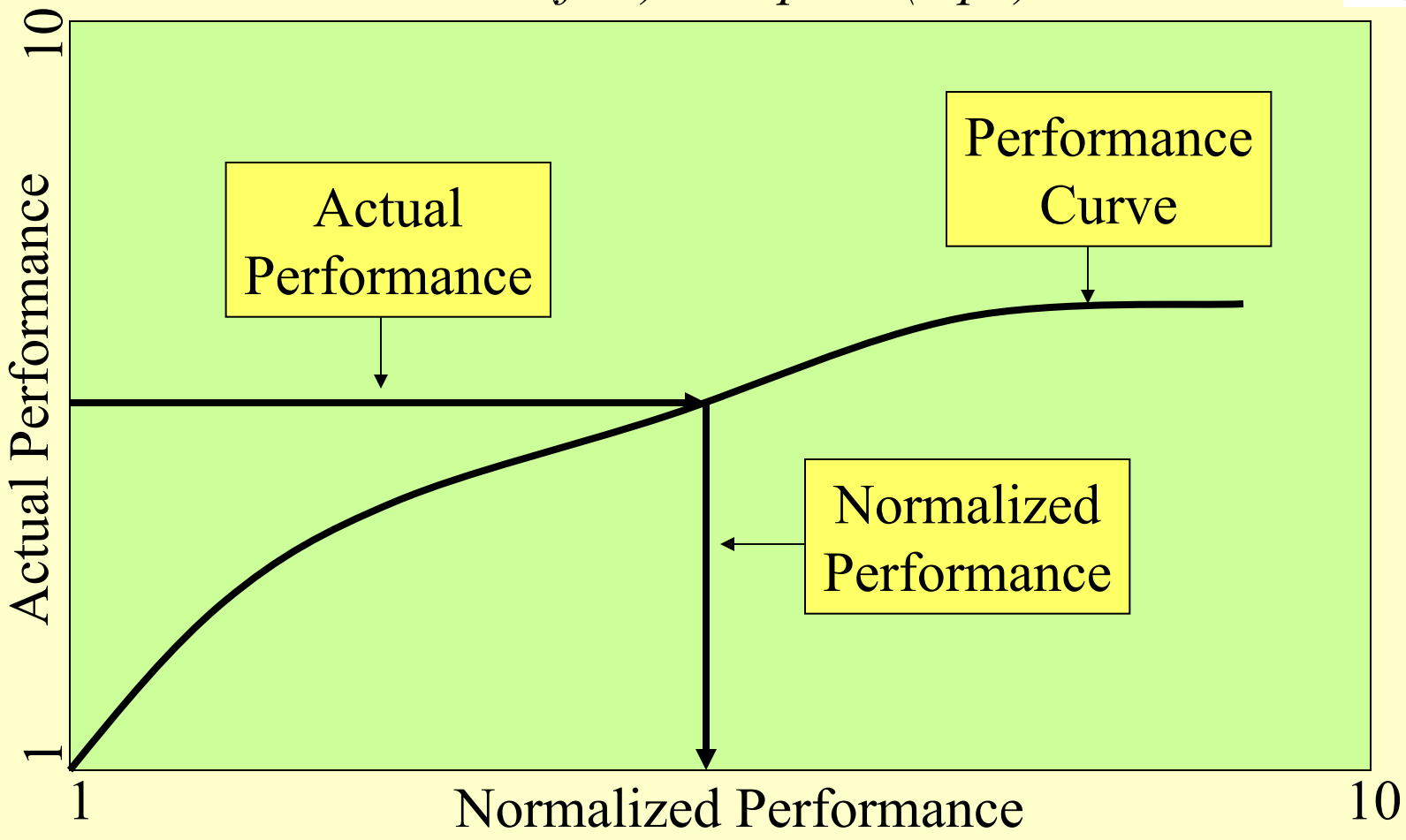
MOE/MOP – Airborne System shall reconnoiter x-sqmi in y-hr.



Inherent weighting anomalies can occur without normalization.

Performance Normalization

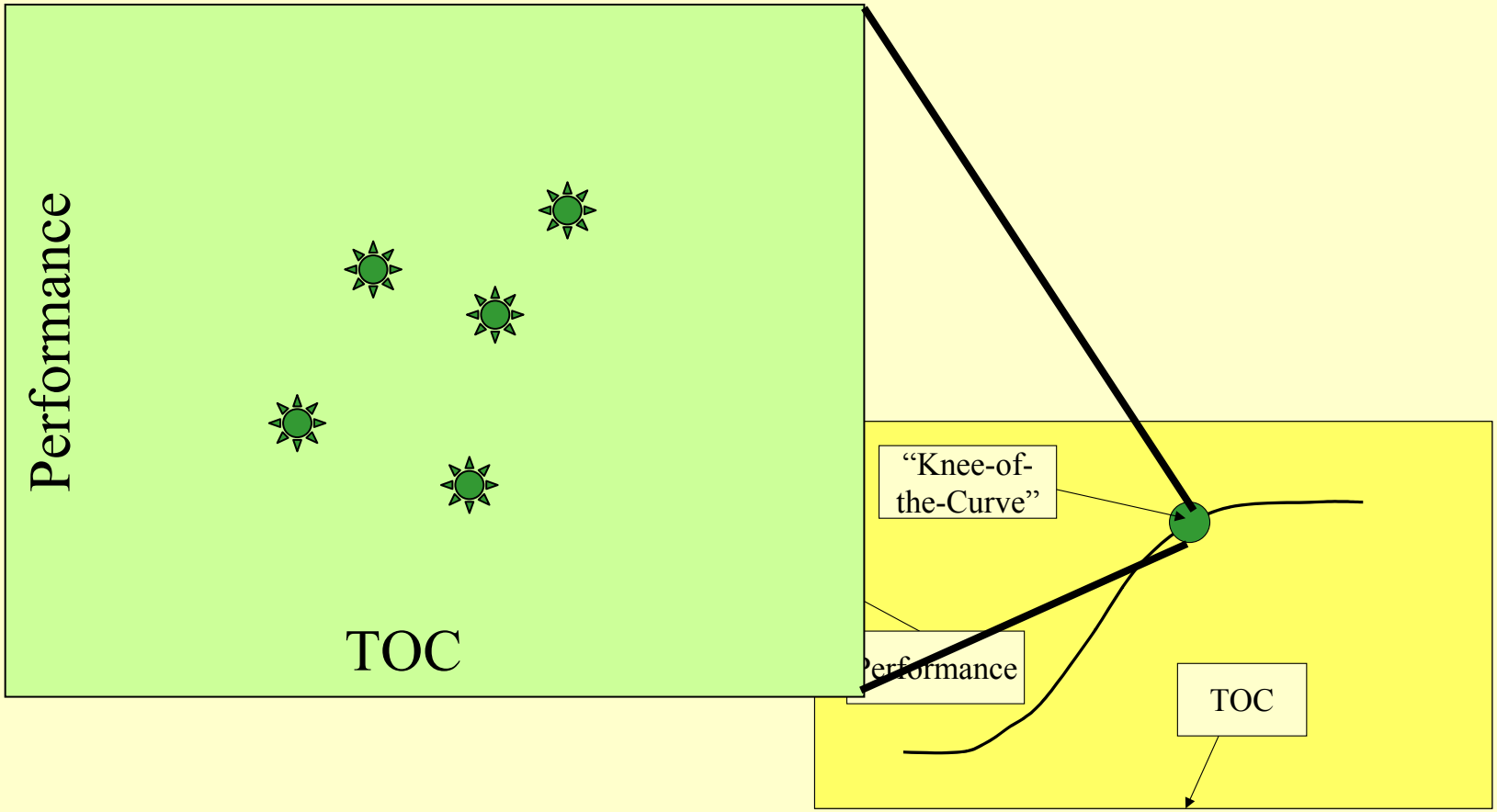
Altitude (feet) vs. Speed (mph)



CAT normalizes Performance to avoid inherent weighting anomalies.

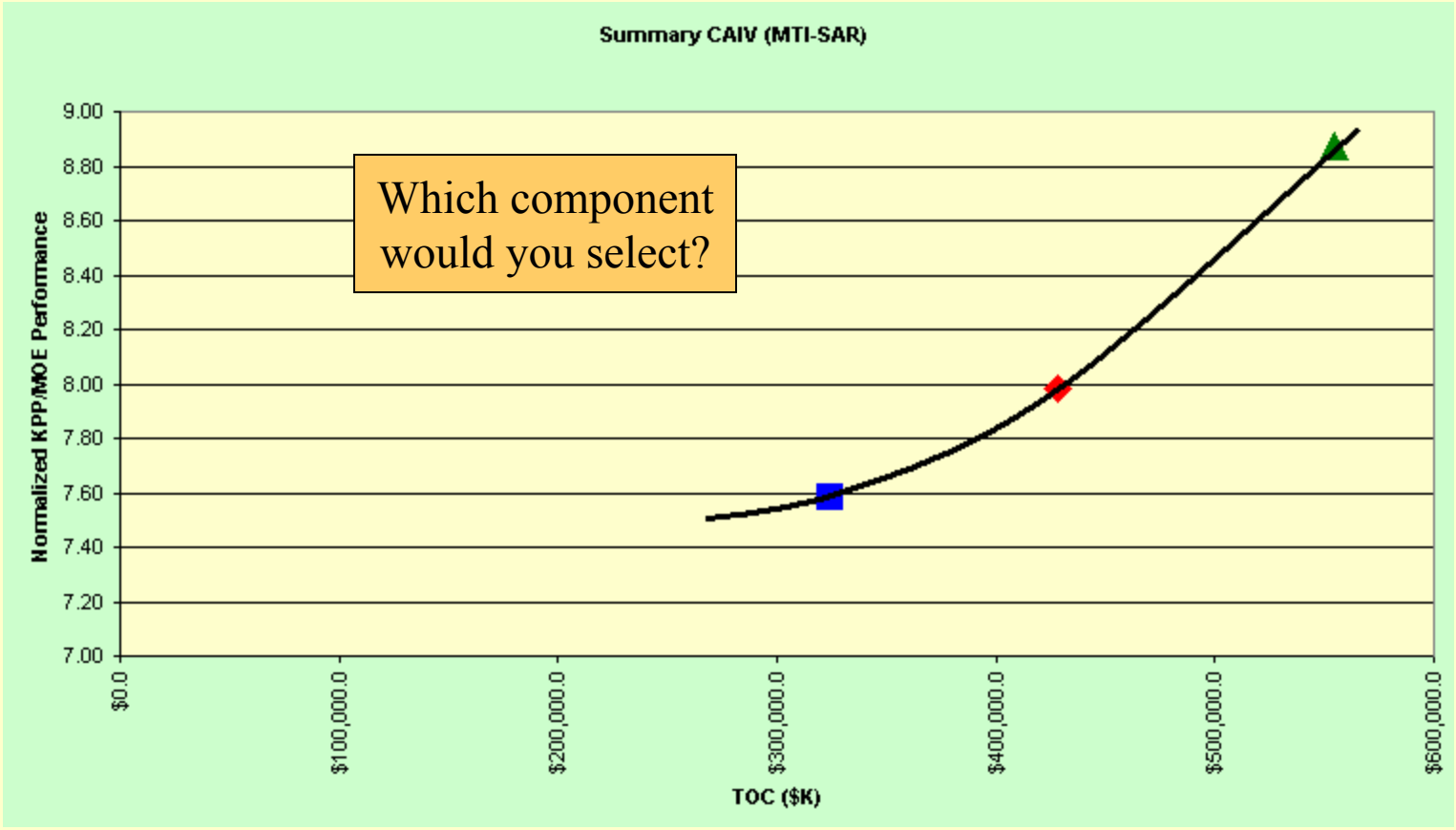
Select the Best Value Component

Zoom-in on "Knee"



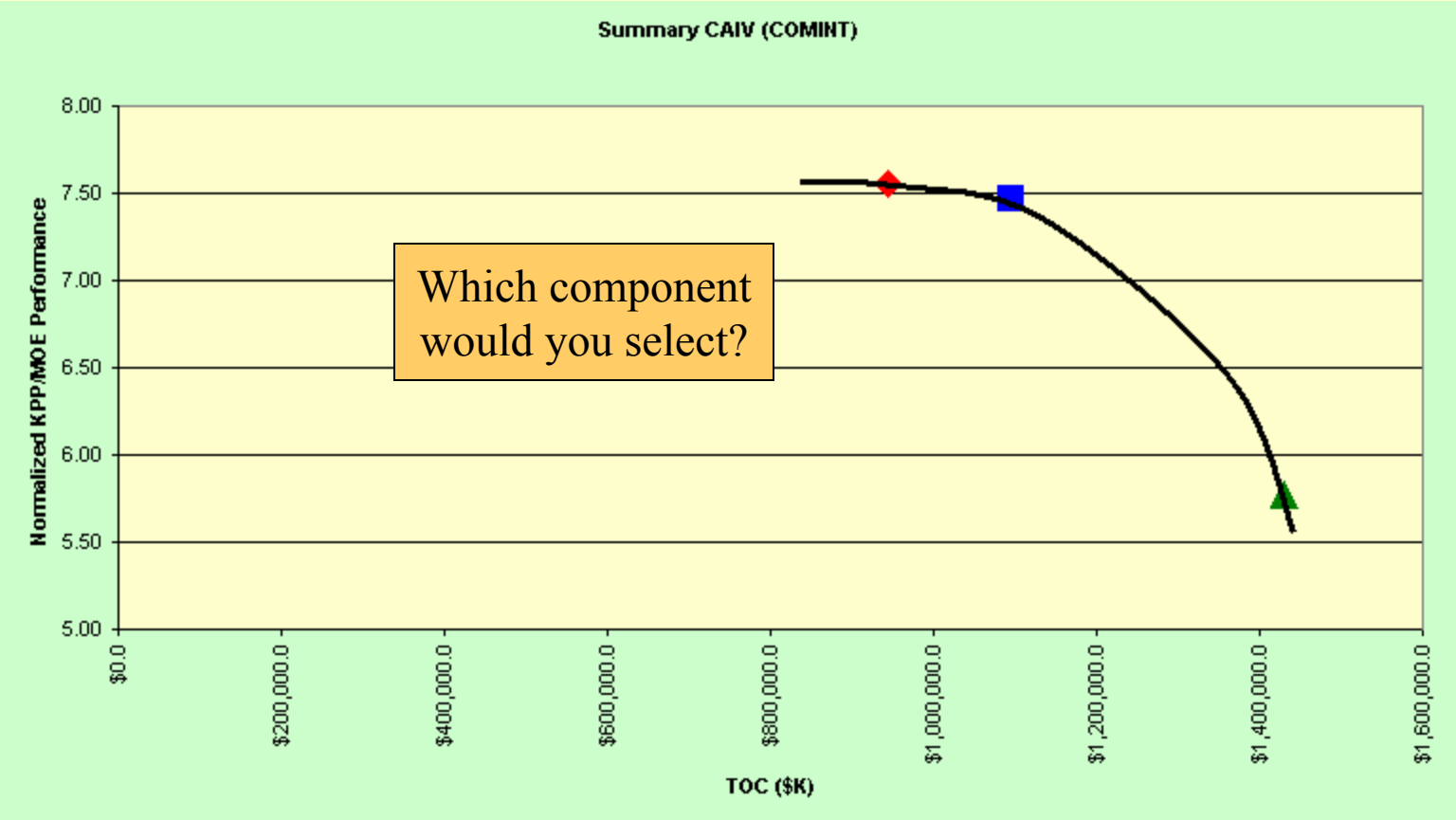
What will the CAIV look like, when we zoom-in on the Knee.

Sample Component CAIV



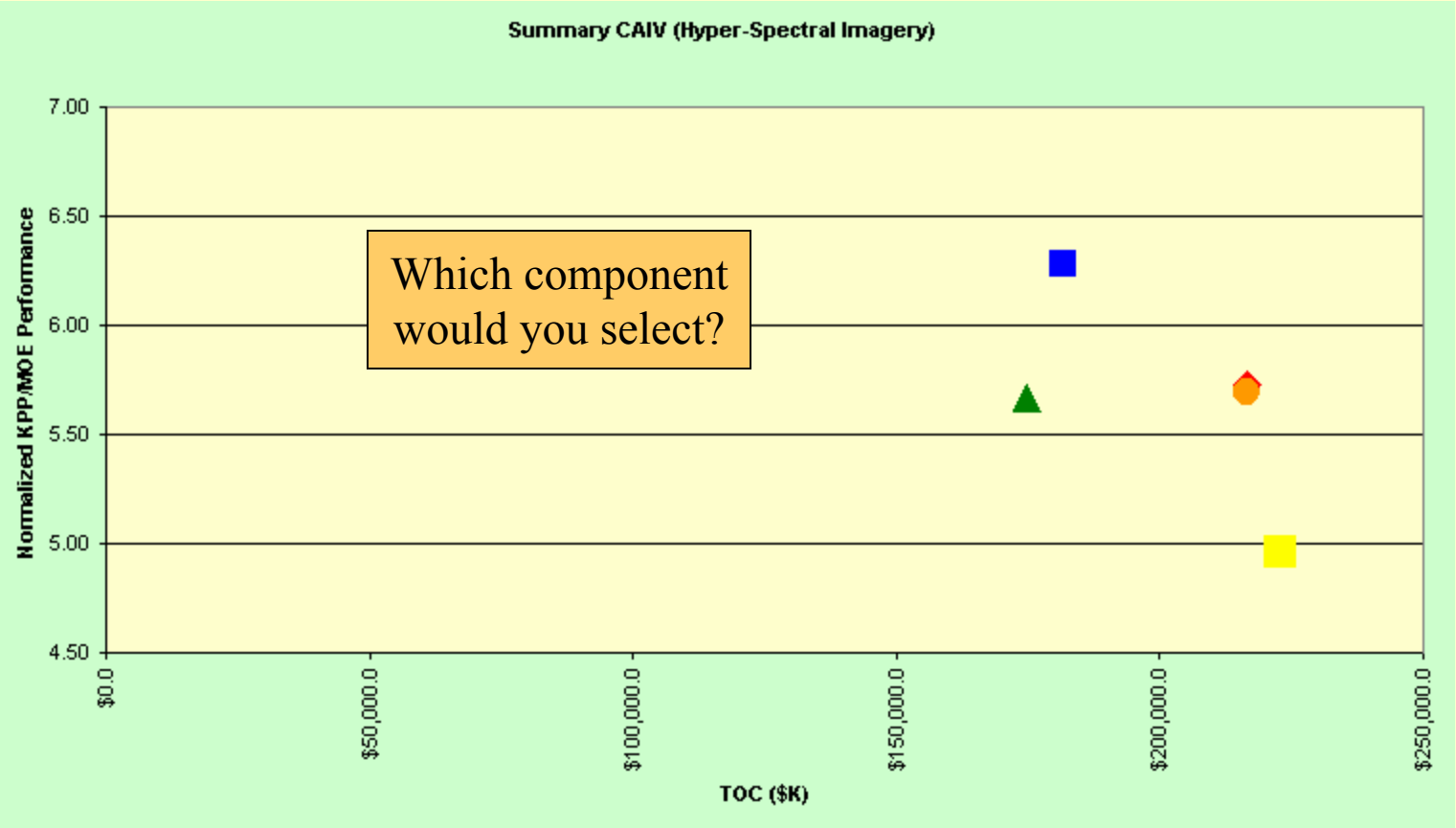
Sometimes we receive the statistical-purist's CAIV Curve.

Sample Component CAIV



Sometimes we receive an inverted CAIV Curve.

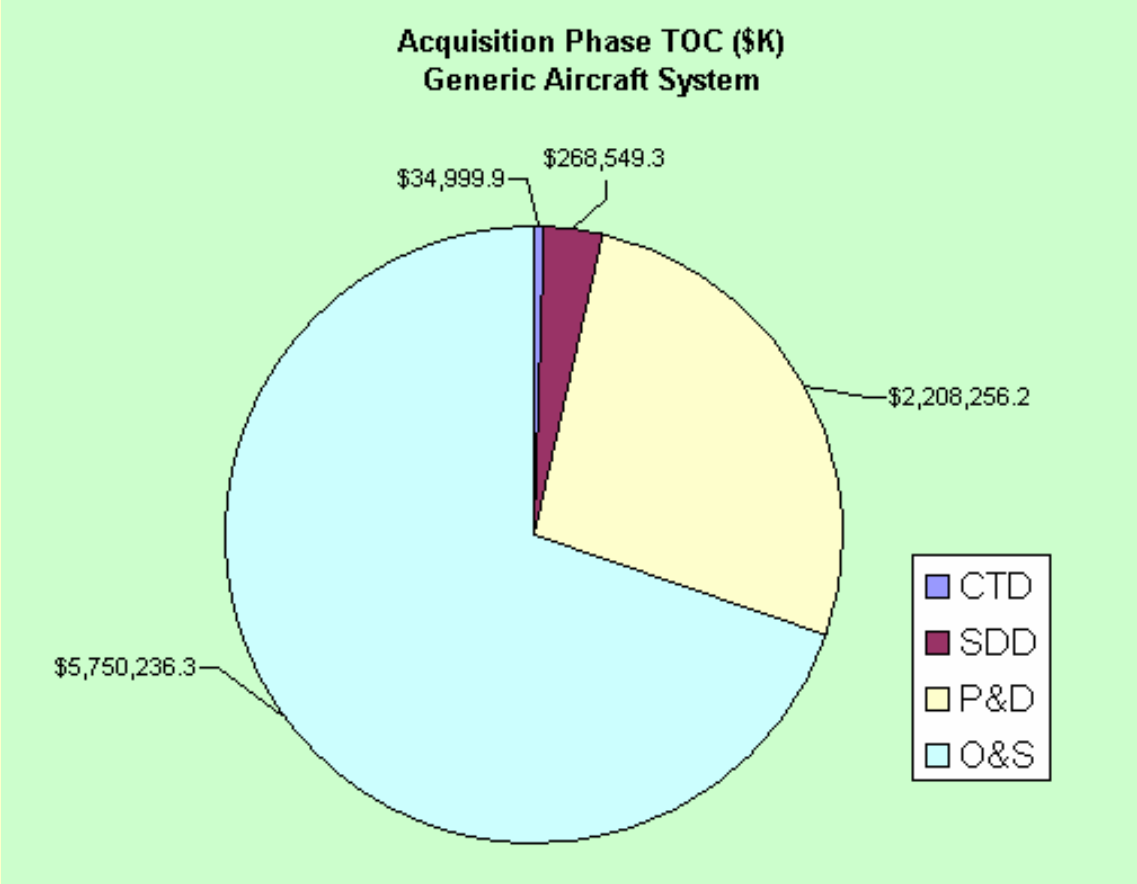
Sample Component CAIV



Sometimes we receive a scatter of dots.

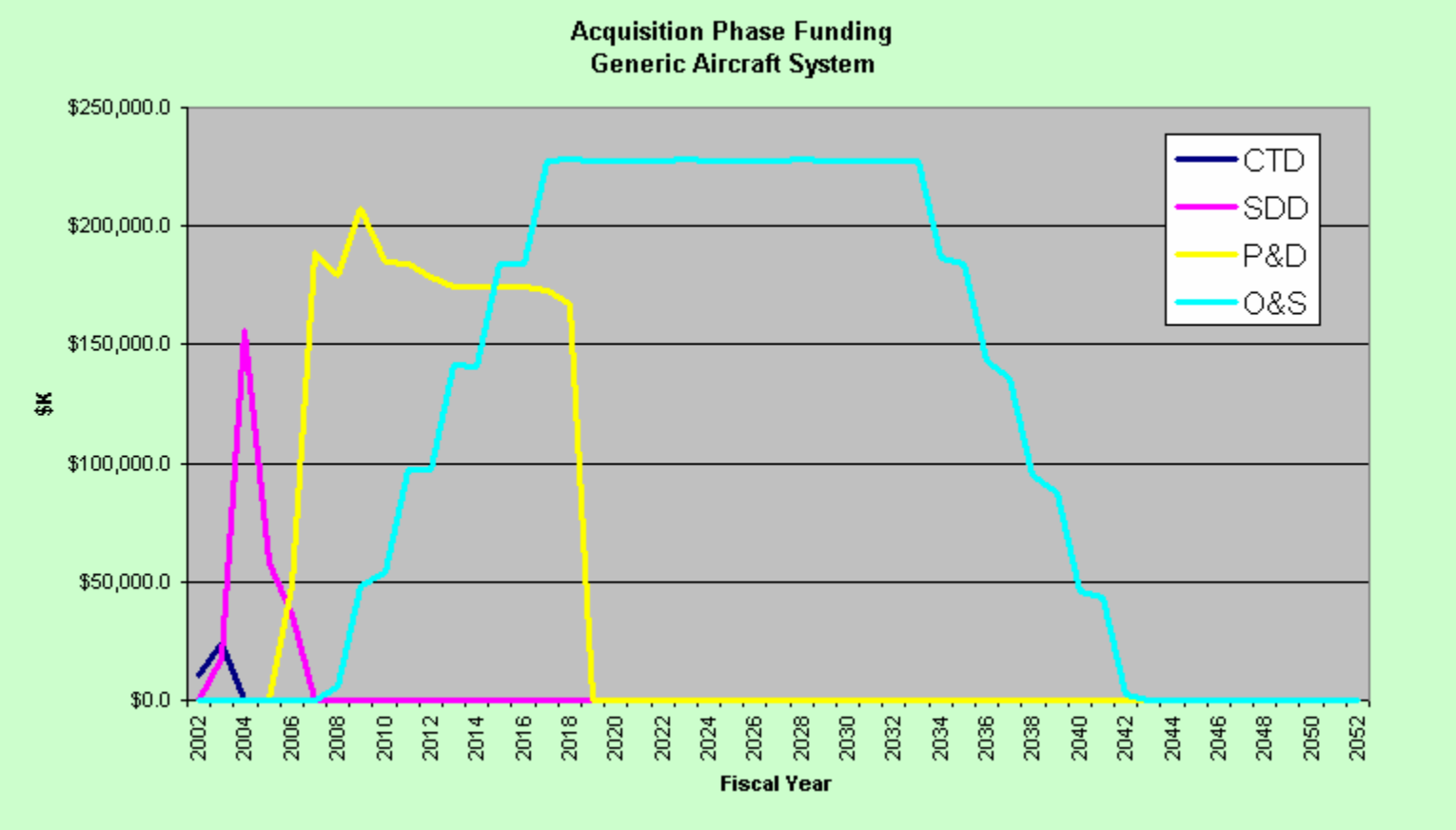
Other Graphs provided by CAT

Acquisition TOC



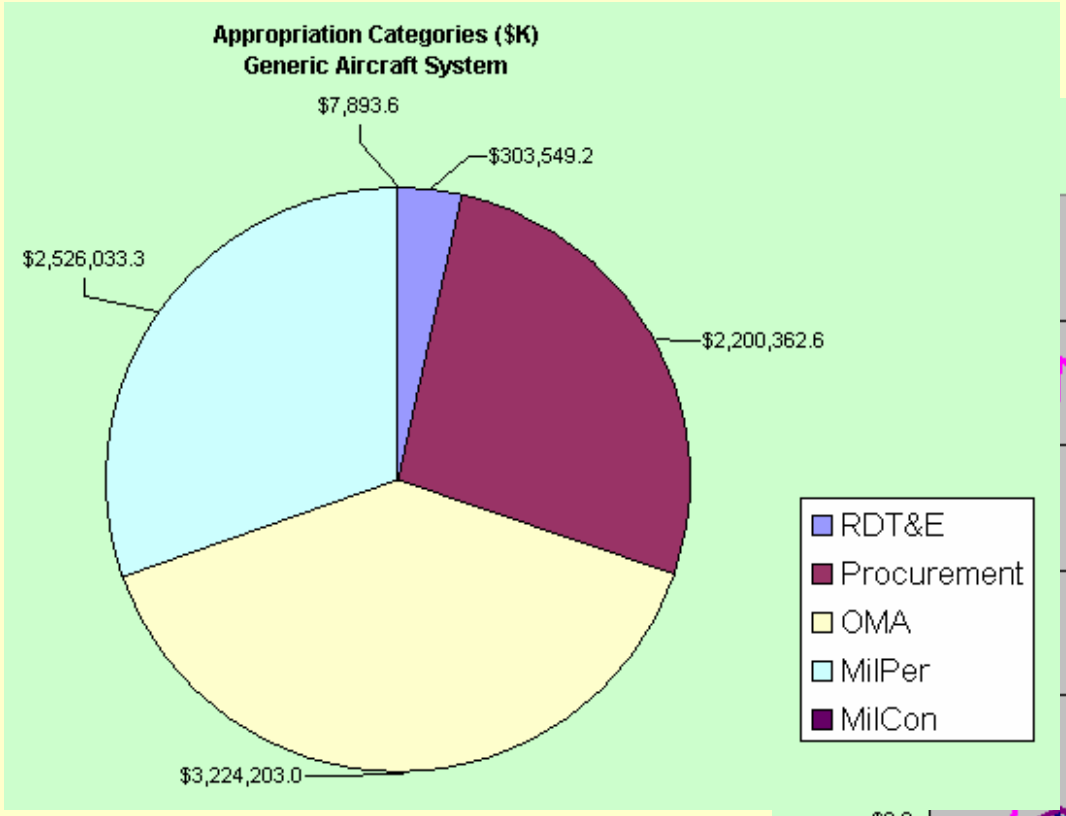
CAT itemizes TOC by Acquisition Phase.

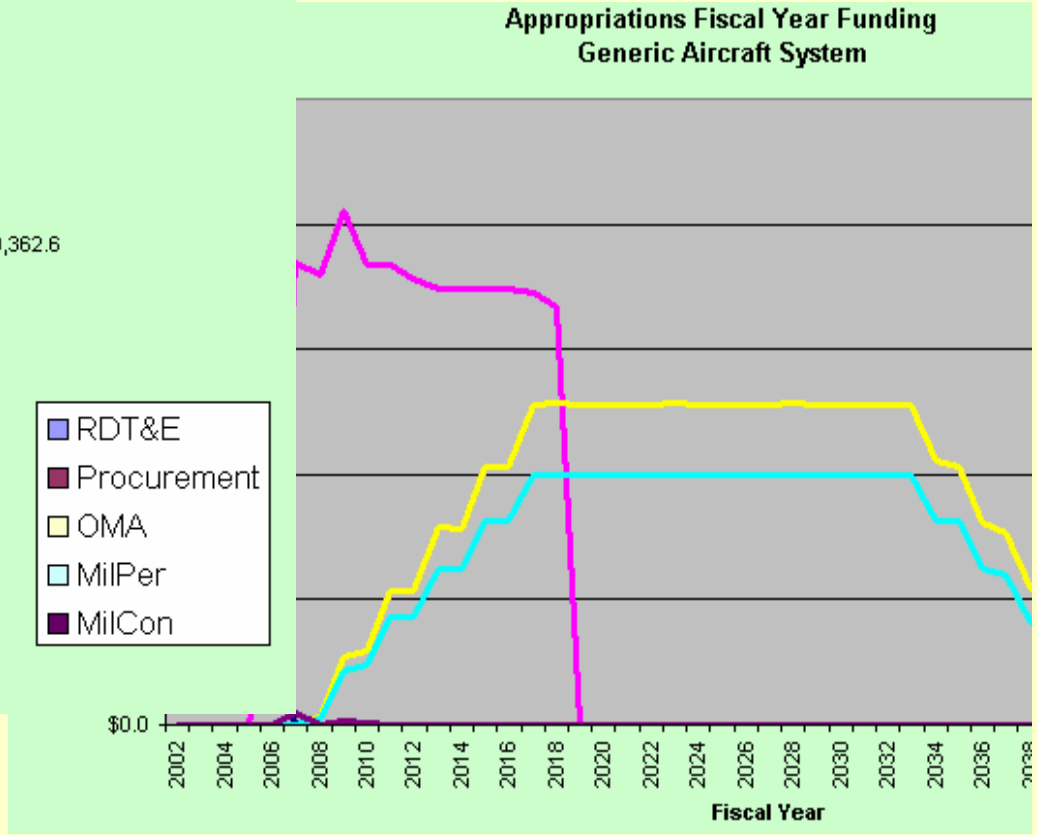
Acquisition Phase Funding



CAT provides funding plan for each Acquisition Phase.

Appropriation Funding

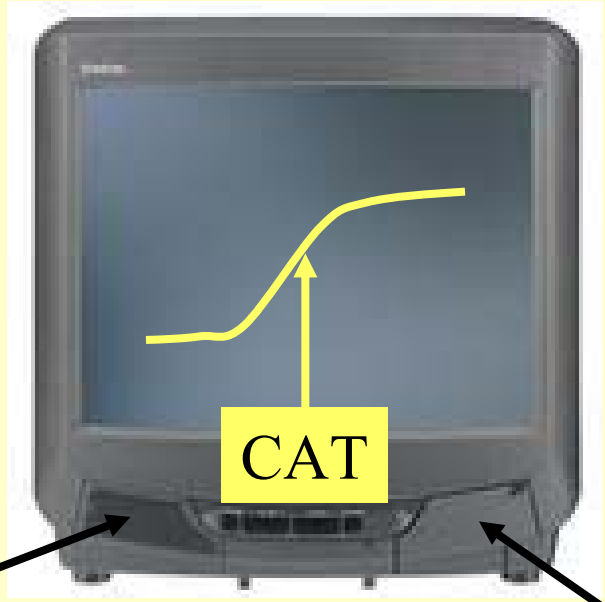




CAT provides funding information for each Appropriation Category.

Conclusion

Futuristic CAIV Model & CAT



Performance Engine Sensitivity

TOC Engine Sensitivity

Control Knobs allow one to adjust Performance or TOC; CAT presents the results.

Conclusion

- The Army has a CAIV Vision.
- ASA(ALT) took an initial step to help CEAC fulfill the Army Vision.
- ASA(ALT) is committed to help CEAC fulfill the Army Vision.

Email twm75402@saalt.army.mil

for a Beta Copy of CAT.